What is claimed is:

1. A method for making a thin film resonant pressure sensor comprising a flexible diaphragm, and at least one microbeam member suspended in at least one suspension point in said diaphragm; comprising the steps of:

forming a diaphragm on a silicon substrate to define a cavity between said substrate and said diaphragm;

forming at least one suspension element depending from said diaphragm into said cavity; and

forming a resonant beam member suspended in said diaphragm in at least one point of attachment by said suspension element.

2. The method as claimed in claim 1, wherein said diaphragm and said suspension element are formed simultaneously in one deposition step.

3. The method as claimed in claim 2, wherein said suspension element is part of said diaphragm.

4. The method as claimed in claim 1, wherein said cavity is defined by providing etchable material on said substrate having a shape corresponding to said cavity.

5. The method as claimed in claim 1, wherein said resonant beam member(s) is embedded i said cavity defining material, by providing said etchable material in two steps and forming said beam between said two steps.

6. The method as claimed in claim 5, wherein said diaphragm and said suspension element(s) are formed after the step of embedding said resonant beam member.

7. The method as claimed in claim 1, wherein said cavity is formed by making a recess in said substrate and by forming said diaphragm over said cavity.

8. The method as claimed in claim 1, wherein said cavity is formed by forming the diaphragm to define said cavity on a flat substrate.

9. The method as claimed in claim 1, wherein there is provided two or more suspension elements and wherein said beam is suspended entirely in said diaphragm.

10. A method for making a thin film resonant pressure sensor comprising a flexible diaphragm, having a microbeam member suspended in at least one suspension point in said diaphragm, comprising the steps of :

forming a depression in a silicon substrate;

filling the depression with silicon dioxide to define a first cavity region;

forming an oxide layer on the silicon substrate;

forming a masking layer defining etch channels leading into said first cavity region;

etching the unmasked oxide areas to leave oxide projections defining said channels;

forming a polysilicon layer;

masking the polysilicon layer to define at least one beam;

etching the polysilicon layer to form said beam;

forming an oxide layer over said at least one beam;

masking said oxide layer to define, together with said first cavity region, a cavity region surrounding said beam, and to define a hole through said oxide extending down to said beam;

etching said oxide layer to form said cavity region and said hole;

forming a polysilicon layer over the cavity region thereby filling said hole to provide a diaphragm and a suspension member connecting the beam to the diaphragm;

forming an etch hole in said diaphragm connecting to said etch channels;

applying sacrificial etching to remove all oxide material defining the cavity to form said cavity; and

sealing the etch channels.

11. A method for making a thin film resonant pressure sensor comprising a flexible diaphragm, having a microbeam member suspended in at least one suspension point in said diaphragm, comprising the steps of:

forming an oxide layer on a silicon substrate;

masking said oxide layer to define a first cavity region;

etching to make said first cavity region;

forming an oxide layer;

masking to define etch channels leading into the first cavity region;

etching the unmasked oxide areas to leave oxide projections defining said channels;

forming a polysilicon layer;

masking the polysilicon layer to define at least one beam;

etching the polysilicon layer to form said beam;

forming an oxide layer over said at least one beam;

masking said oxide layer to define, together with said first cavity region, a cavity region surrounding said beam, and to define a hole through said oxide extending down to said beam;

etching said oxide layer to form said cavity region surrounding said beam, and said hole;

forming a polysilicon layer over the cavity region thereby filling said hole to provide a diaphragm and a suspension member connecting the beam to the diaphragm;

forming an etch hole in said diaphragm connecting to said etch channels;

applying sacrificial etching to remove all oxide material defining the cavity to form said cavity; and

sealing the etch channels.

12. A method for making a thin film resonant pressure sensor comprising a flexible diaphragm, having a microbeam member suspended in at least one suspension point in said diaphragm, comprising the steps of:

forming a masking layer on a silicon substrate to define a depression region in the substrate;

etching away silicon from the unmasked area to form a depression;

thermally oxidizing the silicon in said depression to fill the depression with silicon dioxide so as to define a first cavity region;

etching away the masking layer to expose the silicon substrate;

forming an oxide layer on the silicon substrate;

masking to define etch channels leading into said first cavity region;

etching the unmasked oxide areas leaving oxide projections defining said channels;

depositing a layer of polysilicon;

masking the polysilicon layer to define at least one beam, said beam at least partially being located in said first cavity region;

etching the polysilicon layer thereby removing all material surrounding the beam defining area to form said at least one beam;

forming an oxide layer over said at least one beam;

masking said oxide layer to define, together with said first cavity region, a cavity region surrounding said beam, and to define a hole through said oxide extending down to said beam;

etching said oxide layer to form said cavity region and said hole;

forming a polysilicon layer over the cavity region thereby filling said hole to provide a diaphragm and a suspension member connecting the beam to the diaphragm;

masking to define an etch hole connecting to said etch channels;

etching the polysilicon to open said hole;

applying sacrificial etching to remove all oxide material defining the cavity to form said cavity; and

sealing the etch channels.

13. A method for making a thin film resonant pressure sensor comprising a flexible diaphragm, having a microbeam member suspended in at least one suspension point in said diaphragm, comprising the steps of:

forming an oxide layer on a silicon substrate;

masking to define a first cavity region in the substrate;

etching away silicon from the unmasked area to form said first cavity region;

forming an oxide layer on the silicon substrate;

masking to define etch channels leading into the first cavity region;

etching the unmasked oxide areas leaving oxide projections defining said channels;

depositing a layer of polysilicon;

masking the polysilicon layer to define at least one beam, said beam at least partially being located in said first cavity region;

etching the polysilicon layer thereby removing all material surrounding the beam defining area to form said at least one beam;

forming an oxide layer over said at least one beam;

masking said oxide layer to define, together with said first cavity region, a cavity region surrounding said beam, and to define a hole through said oxide extending down to said beam;

etching said oxide layer to form said cavity region surrounding said beam, and said hole;

forming a polysilicon layer over the cavity region thereby filling said hole to provide a diaphragm and a suspension member connecting the beam to the diaphragm;

masking to define an etch hole connecting to said etch channels;

etching the polysilicon to open said hole;

applying sacrificial etching to remove all oxide material defining the cavity to form said cavity; and

sealing the etch channels.

14. A resonant microbeam pressure sensor comprising:

a substrate;

a flexible diaphragm provided on said substrate such as to form a cavity between said substrate and said diaphragm;

at least one resonant microbeam suspended in said diaphragm in at least one point; wherein said microbeam is located entirely beneath said diaphragm.

15. The resonant microbeam pressure sensor as claimed in claim 14, wherein there is provided a suspension element connecting said microbeam to said diaphragm in a spaced apart relationship.

16. The resonant microbeam pressure sensor as claimed in claim 14, wherein the diaphragm is shaped so as to form an attachment connecting said microbeam to said diaphragm in a spaced apart relationship.

17. The resonant microbeam pressure sensor as claimed in claim 14, wherein said microbeam has a resonance frequency that significantly differs from that of the diaphragm to which it is attached.

18. The resonant microbeam pressure sensor as claimed in claim 14, wherein there is provided a depression in said substrate forming said cavity.

19. The resonant microbeam pressure sensor as claimed in claim 14, wherein said beam is attached to the diaphragm in at least one point and to the substrate in at least one point.

20. The resonant microbeam pressure sensor as claimed in claim 14, wherein said beam is attached to the diaphragm in at least two points, such that said beam is suspended entirely in said diaphragm.

21. A microbeam structure for a resonance pressure sensor, comprising

a sheet of polysilicon;

at least one attachment element for attaching to a diaphragm of said sensor, said attachment element having a finite length and enough stiffness to provide a lever for transferring mechanical stress from said diaphragm to said microbeam structure;

wherein

said microbeam structure has a resonance frequency that significantly differs from that of the diaphragm to which it is to be attached.

22. The microbeam structure as claimed in claim 21, wherein said sheet of polysilicon has a thickness of 100-5000 nm.

23. The microbeam structure as claimed in claim 22, wherein said sheet of polysilicon has a stiffness which is less than the stiffness of the membrane to which is to be attached.